

# PATENT SPECIFICATION



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## COMPLETE SPECIFICATION

### DRAWINGS ATTACHED

#### Improvements relating to Upholstered Seats for Vehicles

We, DAIMLER-BENZ AKTIENGESELLSCHAFT, of Stuttgart-Untertürkheim, Germany, a Company organized under the laws of Germany, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention concerns improvements relating to upholstered seats for vehicles, especially but not exclusively passenger motor vehicles.

The upholstery of vehicle seats, especially of the cushions and backs of back seats, usually contains cold air which heats up slowly. Moreover, the said cushions and backs are generally bounded by cold wall surfaces which always keep the air inside the said cushions and backs cooler than their surroundings.

If there is a heating system, it is difficult, owing to the restricted space, to accommodate suitable flexible pipes for heating the seat cushions and backs and for de-frosting the windows, especially the rear window.

Moreover, due to movements of the occupant, air is pumped out of and into the upholstery. If the upholstery bears directly against the cold surfaces, then the air in the upholstery is kept cold. On compression of the upholstery, some cold air emerges through the upholstery material and also through leaks in the underside of the cushion upholstery and in the back of the back upholstery or through the gap between them. In the last case, it impinges directly on the occupant's back. Thus even when the air inside the vehicle is warm, the occupant's back remains cold and this may cause discomfort or even illness.

To obviate these disadvantages, according to the invention, the underside of the

seat cushion has one or more air-inlet and outlet openings at the front and/or the rear side of the upholstered seat back has one or more air-inlet and outlet openings at the top.

Movements of the occupant, especially up and down movements, will then cause air to be pumped into and out of the upholstery. Consequently the upholstery will be internally heated and cold air will no longer be blown unpleasantly onto the occupant's back through leaks and the gap between the back and the cushion.

Advantageously, one or more blowing nozzles, preferably in the form of short lengths of tubing, are incorporated in or at the opening or openings in the seat back and are directed rearwardly and upwardly.

If desired, an air-heating device may be provided adjacently to the seat. For example, such a device may be disposed directly on the back of the seat back. It may take air to be heated from a space behind the said back, e.g. from the luggage compartment or from the part of the interior of the vehicle behind the said back, heat it and blow it directly into the interior of the upholstery of the said back. In this case the air inlet and outlet openings serve to permit not only the pumping of air in and out due to movement of the occupant but also the escape of air blown into the upholstery by the heating device.

The interiors of the back and seat cushion may communicate with each other and a flap may be provided in the region of the gap between the cushion and back for regulating air flow from the back into the cushion.

A part of the hot air may serve to interpose a heat screen between the seat and adjacent cold surfaces, especially the side

BEST AVAILABLE

walls and doors of the vehicle. To this end, the seat cushion and/or back may have side air inlet and outlet openings situated opposite the doors or side walls.

5 When the external temperature is high, the heating device may be used simply as a ventilating device for the interior of the vehicle, its air-heating means being put out of operation.

10 Two embodiments of the invention by way of example are illustrated in the accompanying drawings, in which:—

Figure 1 is a section longitudinally of a motor car, showing one form of back seat, 15 and

Figure 2 is a similar view of a second form of seat.

In both figures, the seat comprises a seat cushion 1 and a seat back 2, both of substantially hollow construction and sprung by helical springs 3. The figures also show parts of the floor plate 4, the luggage compartment floor 5, roof 6 and adjoining rear window 7. Below the window 7 is a shelf plate 25 8. A passenger is indicated in outline at 9.

The underside of the cushion 1 has at its front an opening 10 through which air can be pumped in and out as indicated by the double arrow 11. This air is taken from 30 the foot space 12, which is usually particularly well supplied with hot air by the vehicle heating system.

In the upper part of the back 2, a further opening 13 is provided, in which is mounted 35 a blowing nozzle 14 directed towards the rear window 7. The air flow to and from the nozzle 14, which may be a short length of bent tubing, is indicated by arrows 15. Misting or frosting of the window 7 is prevented by the air blown onto it. 40

Without the above-described arrangement, relatively cool air would pass through the porous seat coverings 16 and through the gap 17 to the back of the passenger 9. This 45 air would be kept always cool by external cold air, the flow of which is indicated at 18.

In Figure 2, there is provided at the rear of the back 2 an air-heating device 22 which 50 supplies hot air for the upholstered seat. The interiors of the parts 1, 2 serve as passages for the hot air.

The device 22 comprises a fan 25 by which air from the luggage compartment 13 55 is conveyed in the direction of the arrow 24 through a heat exchanger 26 and then directly through an opening 27 into the interior of the back 2, as indicated by the arrows 28.

60 The air passes partly in the direction of the arrow 19 into the interior of the cushion 1 and thence through the opening 10 in the direction of the arrow 11 into the foot space 12. The amount of air flowing in the direction of the arrow 19 from the interior of 65

the back 2 into the interior of the cushion 1 can be regulated by a flap or tongue 33 situated in the region of the transition between the back 2 and the cushion 1. Air branching off upwardly passes through the 70 upper opening or nozzle 14.

Air flow through the interiors of the cushion 1 and back 2 will be assisted by movement of the occupant 9.

If the external temperature is high, the 75 heat exchanger 26 can be put out of operation so that the device 12 serves for ventilating only.

Deliberate provision may be made for part of the air to escape through the upholstery coverings 16 by furnishing them 80 with perforations.

#### WHAT WE CLAIM IS:—

1. An upholstered seat for a vehicle, wherein the underside of the seat cushion 85 has one or more air-inlet and outlet openings at the front and/or the rear side of the upholstered seat back has one or more air-inlet and outlet openings at the top.

2. A seat according to claim 1, wherein 90 one or more blowing nozzles are incorporated in or at the opening or openings in the seat back and are directed rearwardly and upwardly.

3. A seat according to claim 1 or 2, 95 wherein an air-heating device is provided adjacently to the seat.

4. A seat according to claim 3, wherein the heating device is arranged on the back of the seat back and to take air from a 100 space behind the said back, to heat it and blow it directly into the interior of the upholstery of the said back.

5. A seat according to claim 3 or 4, wherein air inlet and outlet openings are 105 arranged to permit not only the pumping of air in and out due to movement of the occupant but also the escape of air blown into the upholstery of the seat by the heating device. 110

6. A seat according to any one of the preceding claims, wherein the interiors of the seat back and seat cushion communicate with each other.

7. A seat according to any one of the 115 preceding claims, wherein a flap is provided in the region of the gap between the seat cushion and seat back for regulating air flow from the said back into the said cushion.

8. A seat according to any one of the 120 preceding claims, wherein the seat cushion and/or seat back have also side air inlet and outlet openings situated opposite doors or side walls of the vehicle.

9. A seat according to any one of claims 125 3 to 8, wherein provision is made for putting the air-heating means of the heating device out of operation so that the device can serve as a ventilating device only.

10. A seat substantially as described with 130

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reference to Figure 1 of the accompanying drawings.

11. A seat substantially as described with reference to Figure 2 of the accompanying 5 drawings.

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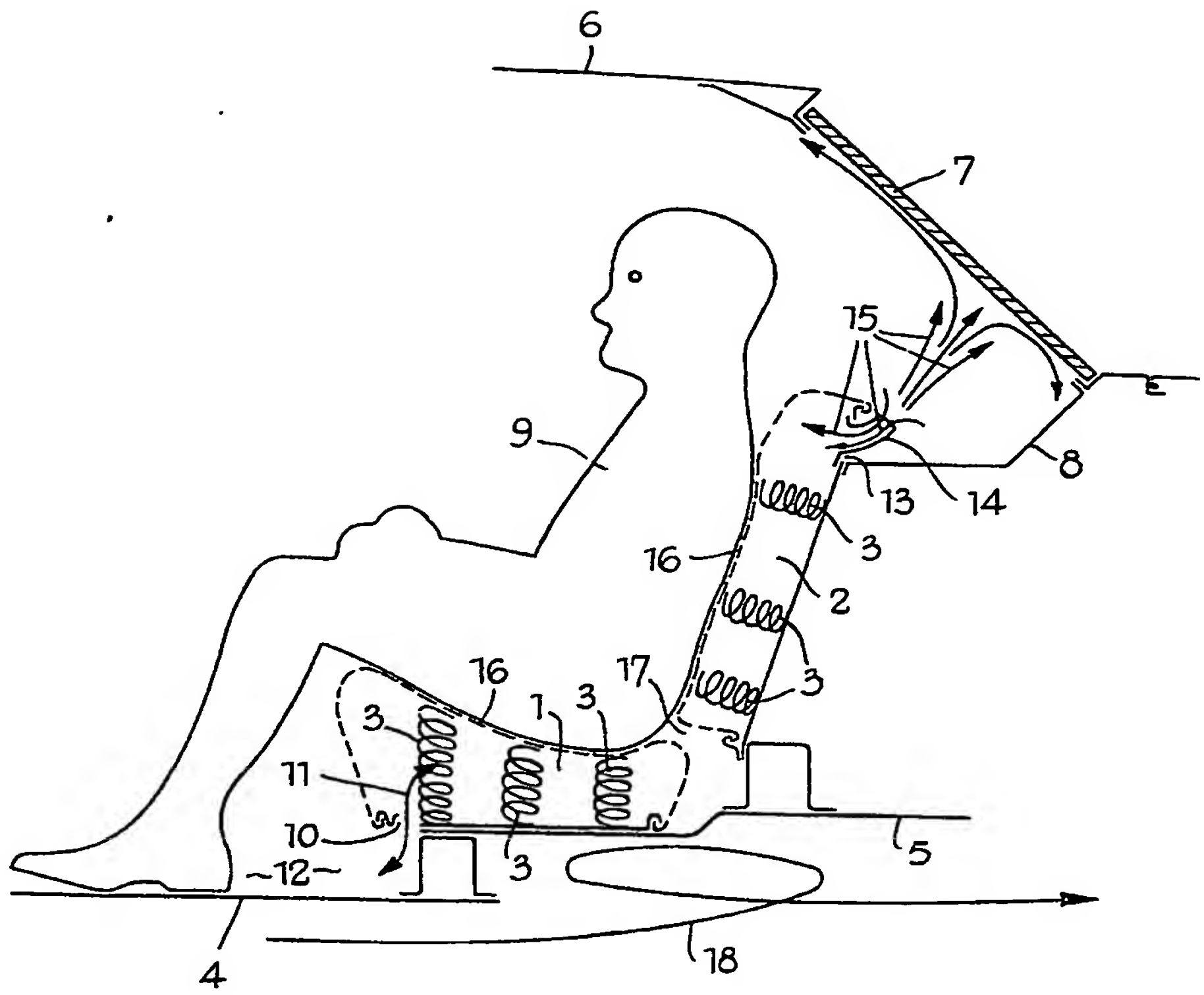


FIG.1

880,081 COMPLETE SPECIFICATION

**2 SHEETS**

***This drawing is a reproduction of  
the Original on a reduced scale.***

**SHEETS 1 & 2**

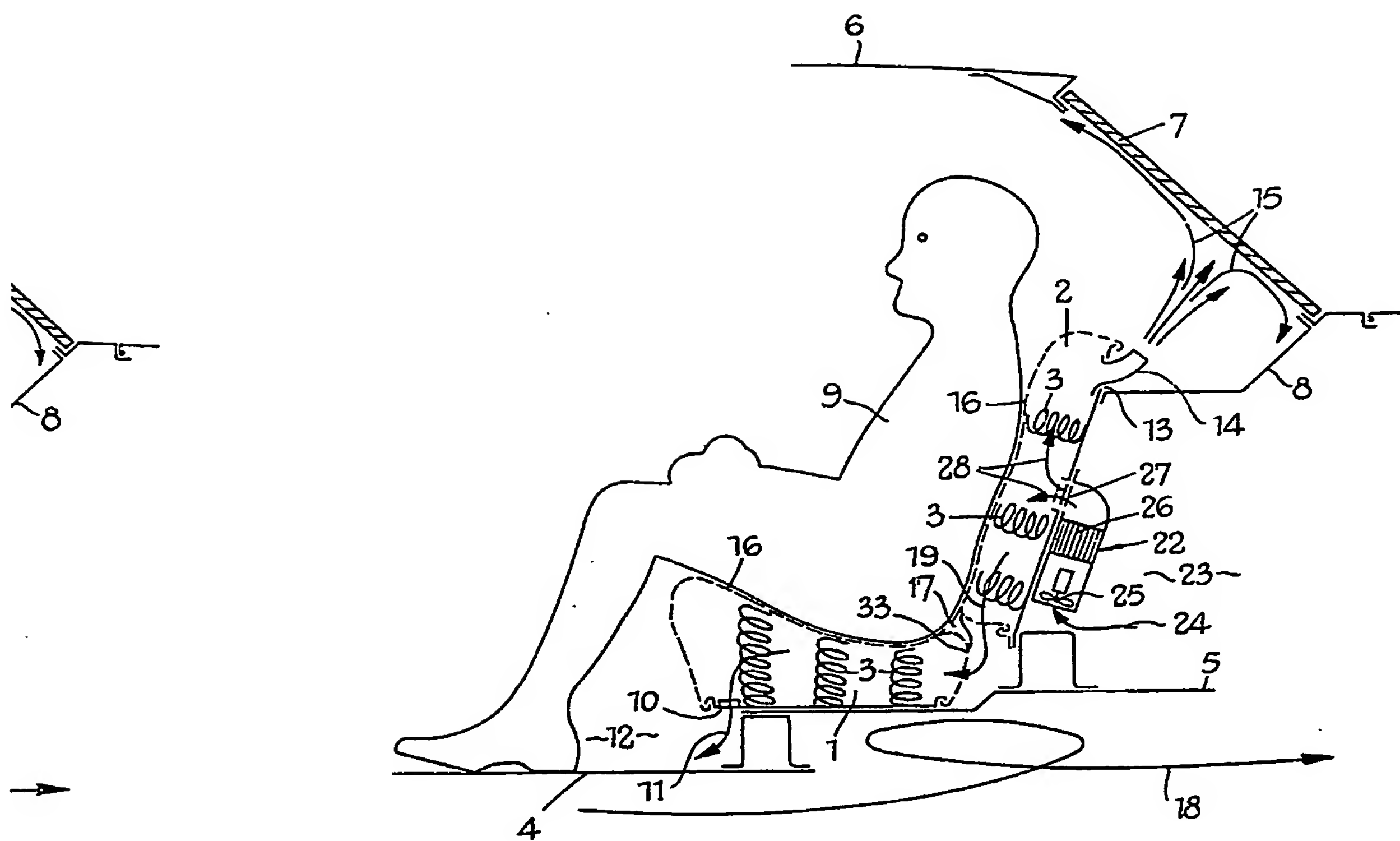


FIG.2

880,081 COMPLETE SPECIFICATION  
2 SHEETS  
This drawing is a reproduction of  
the Original on a reduced scale.  
SHEETS 1 & 2

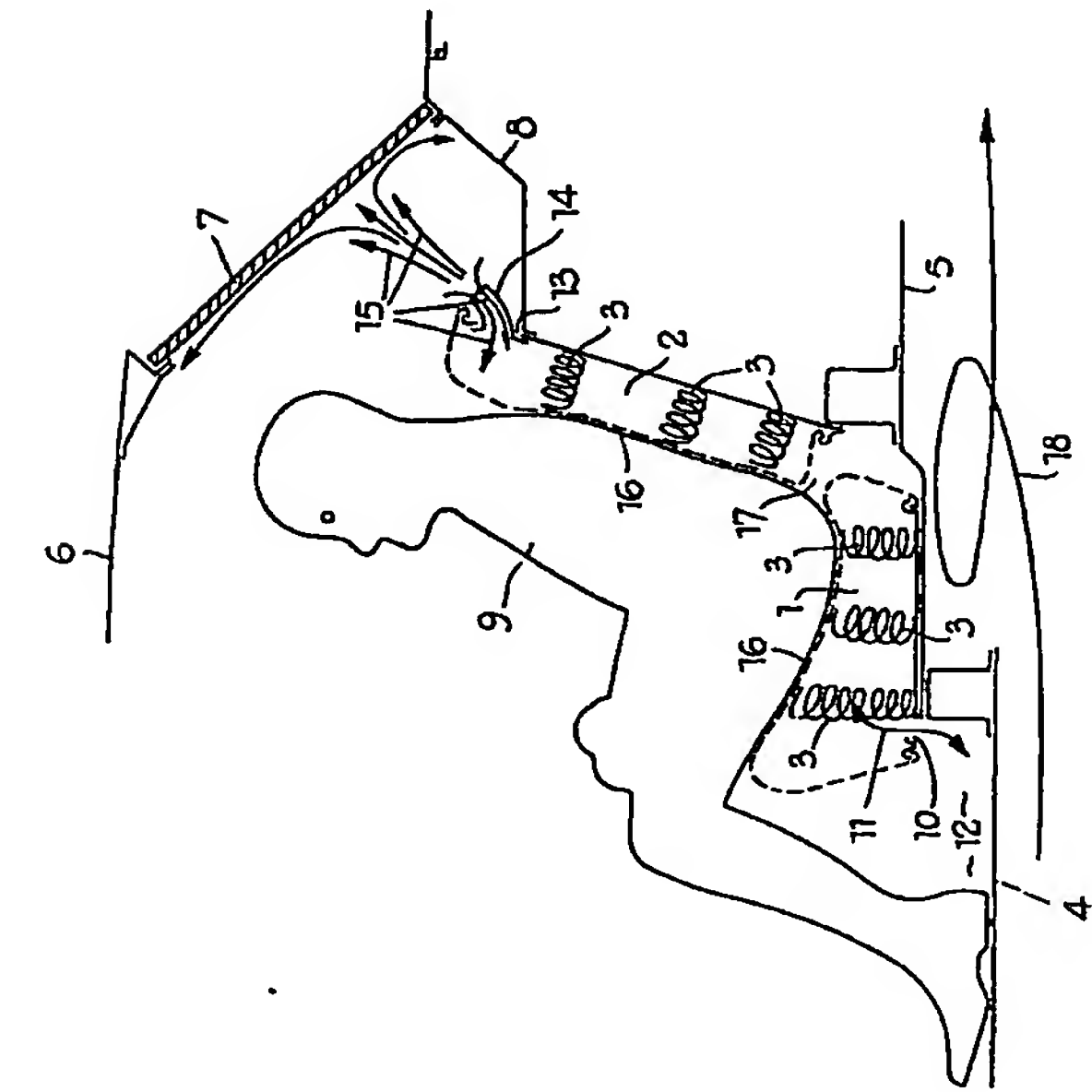


FIG. 1

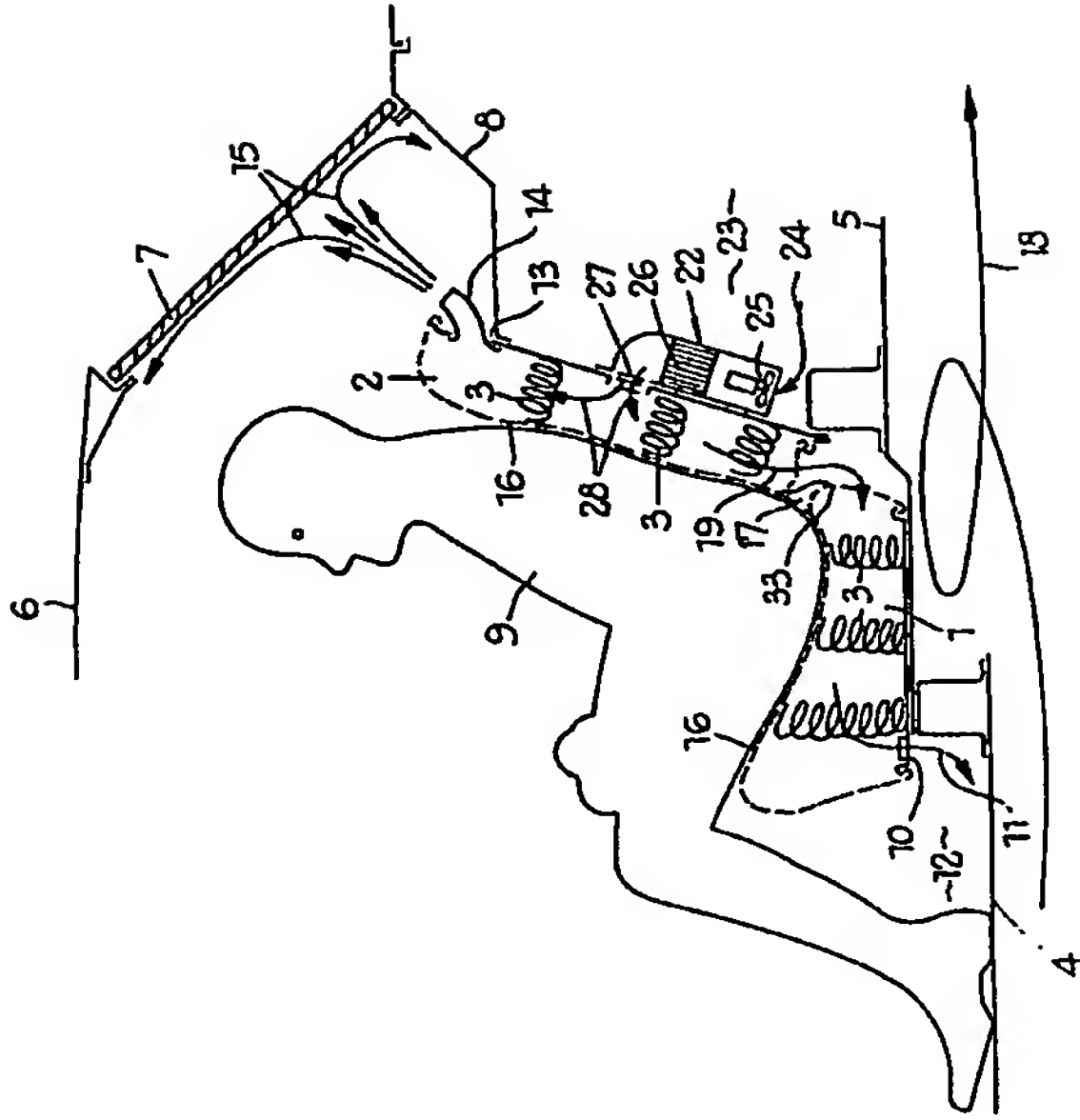


FIG. 2